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EDITED BY WILLIAM HUNTING, F.R.C.V.S.

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NEXT WEDNESDAY.

All members who can, ought to attend the Annual General Meeting on Wednesday next. It is true that the Council election is devoid of excitement, but the Report and Balance Sheet together will provide ample material for a good discussion. Then, in the evening, there will be the dinner, which both those who have been present at the meeting and those who have visited Epsom should manage to attend. Particulars of the dinner have already been circulated, and it only remains to be added that it promises to be one of the most successful of the many which have been held on the evening of this day. Distinguished guests are expected, a good musical programme has been arranged, and the presence of ladies will add to the pleasure of the reunion. The one thing necessary for a complete success is a good attendance.

A FEW STATISTICS.

The fact that for some years past we have had a well kept Register enables us to draw some conclusions as to the numerical progress of the profession. The number of our members fluctuates from year to year—the length of each year's obituary list of course has an influence here—but upon the whole the membership shows a slight tendency to increase. The actual numbers for the years 1908 onward to 1913 are respectively 3382, 3329, 3372, 3423, 3417, and 3441. Not so many of these remain at home in private practice as was once the case—the Army, the Colonies, and the Civil Veterinary Service at home and abroad, absorb a far greater proportion of our young men than ever before. On the other hand, the number of "Registered Existing Practitioners" is rapidly declining. From 319 in 1908 they have dwindled to 218 this year; and eight deaths have been reported since the Register was issued. There was a time when the opposition of Registered men seriously hampered us; it can scarcely be said to do so now. These points suggest that a careful comparison of our past and present conditions might justify more hope for the future of private practice than some members feel. The approaching disappearance of the registered practitioner, the present tendency of our members to emigrate, and the rapidly increasing demands of the public services, all combine to counteract the undoubted decline of private practice in this country. It seems possible that, for a good many years to come, the supply of young men entering private practice here may not exceed—perhaps not even quite equal—the demand for them.

LAMINITIS WITH METASTATIC BLINDNESS IN A HORSE.

Speiser, of Nurnberg, records the case of a chestnut gelding, twelve years old, which had been in the possession of his owners for six years without previous illness. He came under treatment on February 9 last, then showing complete loss of appetite, a temperature of 103·6° F., and 86 heartbeats and 34 respirations per minute. The conjunctivæ were dirty orange-red, the expression was fixed and anxious; the respiration was superficial and painful, but showed no other special feature. The intestinal movements were active, and the horse was sweating. He could only be moved with great difficulty, trying to lift his feet as little as possible from the ground. The muscles of the hind-quarters were hard and tense, and they seemed—so far as the great pain in the feet permitted this point to be ascertained—to be painful when energetically palpated.

The history was that the horse had suffered three days before from an intestinal catarrh with dirty stinking diarrhœa, and had not then undergone veterinary treatment.

Speiser ordered 80 grammes of aceto-salicylic acid to be given four times daily, the shoes to be removed, and cold packings to be applied to the feet.

This treatment is often successful in slight and moderately severe cases of laminitis, and Speiser thought the horse too weak for phlebotomy. It was found impossible to remove the hind shoes.

Next day the condition was unaltered. The thoracic organs were normal, the appetite was bad, and thirst was intense. The horse sweated violently and did not lie down.

The day after (February 11) Speiser was told on arriving that the horse had become blind during the night, and, to his great astonishment, he found that this was true. The pupils were dilated to the maximum, and showed reaction to artificial illumination. On the other hand, neither photophobia nor lachrymation were present. Seen from a distance, the eyes had a greenish lustre. The aqueous humour was very turbid from the presence of flaky exudate, and the case appeared very similar to a severe one of periodic ophthalmia, except that the pupils, instead of being contracted as in that disease, were dilated.

From the absence of photophobia and lachrymation, the idea of an affection of the whole uveal tract (irido cyclo-choroiditis) could not be accepted, but the marked green lustre indicated an opaque condition of the crystalline lens. Speiser did not attempt ophthalmoscopic examination of the back

of the eye, on account of the great turbidity of the transparent media. But all the demeanour of the horse when examined—the absence of reaction to light and to threatening movements of the hand, and the behaviour when food was held before the animal—showed that both eyes were completely blind. It was thus evident that the retina and optic nerve must also be involved in the morbid process.

Möller, in his *Augenheilkunde* (page 70, 3rd edition) describes a case of idiopathic iritis in the horse which existed almost coincidently with muscular rheumatism. In many points the symptoms of this case show a great similarity to those of the one just recorded, but in Möller's case the background of the eye was not implicated in the process.

Unfortunately, Speiser could not follow the progress of the case. On account of deterioration in the general condition and increase of the pedal and muscular pains, the horse was slaughtered the day after blindness set in. Speiser says nothing of any post-mortem examination.

In conclusion, Speiser refers to the question of differential diagnosis, especially with regard to the possibility of influenza. He mentions the latter disease in particular, partly because of the variety of its complications, and partly because during 1912 and 1911 he treated a great number of cases of influenza with conspicuous participation of the ocular and locomotor apparatus in the symptoms. However, the absence of photophobia, of any affection of the conjunctiva, and of œdemas of the skin and limbs, all negative any connection of influenza with the case. So also does the fact that five other horses were standing in the same stable, and no other cases of illness appeared.

Speiser regards the laminitis as an "intoxication-laminitis," and remarks that the connection between the previous intestinal catarrh and the laminitis is easily explained. He thinks that by appropriate treatment (disinfection of the intestinal tract) the generalisation of the disease might perhaps have been averted.—(*Münchener Tier. Woch.*)

Hæmaturia in a Horse.

Speiser, of Nürnberg, records the following unusual case. The subject was a brown gelding, eighteen years old, the property of a coal firm. He was said to have been thirteen years in the possession of the firm, and never to have had an illness till the day of this attack, when, in the afternoon, he suddenly showed profuse hæmorrhages from the urinary passages. Speiser first examined him towards evening on the same day.

When examined, the horse appeared in rather poor general condition, as far as nourishment was concerned. The pulse was 48 per minute, and the temperature 101·3° F. In other respects the condition was normal. The horse seemed alert, the appetite was good, and no expressions of pain were evident. The mucous membranes were rose-red. In Speiser's presence the horse passed, without any straining, a small quantity of pure uncoagulated blood. The floor of the stable was widely covered with coagulated blood which had been passed before Speiser's arrival.

Rectal examination showed the bladder to be empty, the size of a fist, not sensitive, and presenting no alterations from the normal. Palpation in the region of the right kidney caused slight evidences of pain.

This condition remained practically unaltered for about eight days. The horse continued to pass blood often, but in smaller quantities. The general condition, and particularly the appetite, remained excellent; and the pulse and temperature returned to the normal.

Under these circumstances Speiser was unable to fix upon an exact diagnosis. The remarkably good general condition seemed to negative the idea of the source of the hæmorrhages being the kidneys. At first Speiser suspected the existence of a carcinomatous or ulcerative process in the bladder, with erosion of a bloodvessel; but the negative results of manipulation of the bladder per rectum, and the absence of straining negatived this view. The absence of urine when blood was passed negatived a pathological condition of the urethra, The conditions of the horse's work, feeding, and care were inquired into, and nothing to which exception could be taken was found.

At first the treatment consisted of non-irritating diet (oats being excluded from the ration) and the administration of 15 grammes of the fluid extract of hydrastis three times daily. This treatment was carried out for about eight days without any success.

In the second week an alteration appeared. When blood was passed, two portions of the discharged fluid could be distinguished; the first half consisting of urine deeply coloured with red, and the second half of coagulated blood. The urine always contained so much blood that neither chemical nor physical examination of it had any value.

Towards the end of the second week progresrive bodily weakness set in, and the conjunctival mucous membranes became very pale; although Speiser restored oats to the diet, and the appetite remained excellent to the last. Having regard to the progress of the case, the age of the horse, and the fact that his limbs were not in the best condition, it was decided to slaughter him. This was done at the end of the second week.

Post-mortem, the urethra, bladder, and ureters showed no lesions. The left kidney was almost doubled in volume. The renal parenchyma was traversed at two places, each of about the breadth of two fingers, by streaky hæmorrhagic infarcts. These places were very moist; and one contained in its centre a cyst the size of a hazel nut, which was filled with urine. Punctiform and very small streaky hæmorrhages were sparingly distributed over the remainder of the renal tissue.

A microscopical examination of the kidneys was not made. Speiser remarks that it is not clear that the anatomical alterations could have induced such persistent hæmorrhages. He suggests that hæmophilia may have been present, but leaves this question undecided. He adds that the blood, when discharged, always coagulated very quickly. —(*Münchener Tier. Woch.*)

The Treatment of Follicular Mange.

J. Fischer, of Cilli, writing upon this subject (*Tierärztl. Zentralbl.*) says that the mixture recommended by Gmeiner (Ol. carui, ol. ricini, and spirit) fails to cure severe cases of the disease.

In one case in which follicular mange had existed for over a year and had spread over the whole body, Fischer obtained a cure in six weeks by the following method.

The body was thoroughly lathered, and the soap allowed to remain on it till next day, when it was washed off with lukewarm water. The scales and crusts were removed as well as possible by means of brushes, and the contents of the pustules were pressed out. The skin was rubbed with benzine to remove the fat. Then, by means of a hard paint-brush, a mixture of 100 parts of tincture of iodine and 20 parts each of formaldehyde and sulphuric ether was rubbed into the skin. At first this treatment was repeated every four days, and afterwards every seven days. The epithelium became detached in large portions, while the underlying parts became red and swollen. From time to time, also, baths of sulphurated potash were ordered.

The recovery was a complete one, and, six months later, no recurrence had appeared.—(*Münchener Tier. Woch.*)

[This treatment seems likely to be as effective as any, but it is undoubtedly a severe one.—Transl.]

W. R. C.

THE VETERINARY SURGEON AND HIS RELATION TO THE REFRIGERATED MEAT SUPPLY.

By Alex. Crabb, m.r.c.v.s.

The application of the principles of refrigeration to the preservation of meat has led to the development of a large and important trade, and as a considerable number of members of the veterinary profession are associated, more or less closely, with this industry, I beg to place before you a few of the more important points which, I hope, will be considered of sufficient interest to merit acceptance.

Members of our profession are interested in refrigerated meat, both in the various countries of origin, where they act as meat inspectors at the time of slaughter, and also in this country where the meat comes under their jurisdiction on arrival and on the various markets where it is exposed for sale; being an article of a perishable nature, their decision is oftentimes required as to its condition, fitness for food, etc.

The fact that the consumption of frozen meat is yearly on the increase, combined with the knowledge that our profession is gradually attaining a more prominent part in meat inspection, makes the subject one of increasing interest.

The aspect I wish to deal with mainly is the effect of refrigeration upon meat, with a view to proving that it is a suitable and nutritious article of diet; I also purpose dealing with some of the abnormal conditions found in refrigerated meat which bring it under the notice of the veterinary or other meat inspector in this country. Lastly, I intend touching upon the inspection in the country of origin and discussing the advisability of some uniform and international standard of inspection, the adoption of which would undoubtedly bring veterinarians of various countries into closer touch with each other and would have other beneficial effects.

Although I am aware that they cannot be classed as veterinary subjects, I would beg to touch lightly upon the magnitude of the refrigerated meat supply, and on the principles and the practice of refrigeration, before dealing with other matters of more direct interest professionally, being of opinion that a study of the former, even if elementary in character, may tend to indicate more clearly the conditions referred to in the later parts of this paper.

The Growth of the Refrigerated Meat Industry

The development of this industry has been due to three main factors, viz., (1) the undoubted shortage of meat supply in this country; (2) the discovery that refrigeration of meat was a satisfactory method of preservation; and (3) the fact that a large surplus of live stock could be produced in the Southern hemisphere.

The statistics as to supply and demand are somewhat interesting; as far back as 1840, it could be seen that the meat production of the United Kingdom was not equal to the consumption, the population being approximately 26,000,000, the number of cattle 6,618,000 and sheep 24,190,000.

No purely official enumeration of the flocks and herds of the United Kingdom was made until 1867, but from fairly reliable estimates it was calculated that about 1850-60, the average production of meat in the British Isles, with a population of 28,265,000, was 910,000 tons, or at the rate of about 72lbs. per head per annum, and about this time this was being supplemented by small imports of live stock which brought the total amount available up to about 75lbs. per head per year.

In 1882 the internal meat production had risen to about 1,090,000 tons, but meanwhile the population had also increased and then registered 35,606,000, making an available meat ratio of about 61lbs. per head per annum; this, however, was supplemented by imports, still mainly in the form of live cattle and sheep, which brought the available meat supply up to 110lbs. per head.

Although the internal meat production increased from 1860 to 1880, it was greatly at the expense of the flocks and herds of the country; in 1867 there were 46,770,524 cattle, sheep, and pigs in the country; in 1880, these had actually fallen to 42,974,261—undoubtedly a serious aspect—with a rapidly increasing population, and one that showed that the supply was being overtaken by the consumption.

With the growth of the refrigerated meat supplies, this diminution not only ceased, but some lost ground was made up, and in 1910 statistics show that the number of cattle, sheep and pigs in the country was returned at 46,491,251.

These figures, however, show that the available flocks and herds are no greater than in 1867, notwithstanding an increase in the population of about 15,000,000 people, and if one takes the figures of 1880 as indicating a shortage of about 40 per cent., it may safely be assumed that, but for the arrival of refrigerated meat, this country would have experienced a decided shortage.

The live cattle and sheep which at one time were imported to augment the local supply are, owing to increased demand in their country of origin, no longer available.

Fortunately for the meat supply of the United Kingdom, the vast territories of the Southern Hemisphere are able to fill the deficiency, and in them are large and increasing flocks and herds from which can be drawn practically unlimited quantities.

The following figures will show the comparative position :—

We find that in the United Kingdom, with its population of over 45,469,564, there is less than three-quarters of a sheep per head, and less than a quarter of a head of cattle, even on the basis that the whole, including cows, were available for meat. South America, from the Argentine to Patagonia, has a population of 6,489,000, with 29,116,625 cattle and 67,211,000 sheep, or 4½ head of cattle, and over eleven head of sheep per population. Australia, with a population of 4,422,000 has 11,039,368 head of cattle and 91,661,401 sheep, or 2½ head of cattle and 27 sheep per population. New Zealand, with a population of 1,020,713, has 1,773,326 cattle, 24,269,622 sheep, or 1¾ head of cattle and 24 sheep per head of population.

To summarise and contrast these figures, we have in the United Kingdom 45,500,000 people, 11,697,592 cattle, 31,245,836 sheep, i.e. ¼ head of cattle and ¾ sheep per head of population, while in the three countries of the Southern Hemisphere we have 11,931,000 people, 41,992,317 cattle, 183,142,023 sheep, i.e. 3½ head of cattle, 15¼ sheep per head of population, or fourteen times the quantity of cattle and 20 as many sheep, on the population basis, as are to be found in the United Kingdom.

The foregoing indicates the shortage in this country and the means of supplying the deficiency, and the following particulars will show the steadily increasing demand which has existed in this country for refrigerated meat since its introduction.

In 1880 the imports consisted of 400 carcases of mutton and about 477,000 quarters of beef ; fifteen years later the imports had reached 5,000,000 carcases of mutton and lamb, and about 1,400,000 quarters of beef ; the increase still continues, and in 1912 the figures were over 12,000,000 carcases of lamb and mutton and almost 5,000,000 quarters of beef.

The Principles and Practice of Refrigeration.—Refrigerated meat may be divided into two main classes, viz., "Chilled" and "Frozen" ; in the first, the meat is not solidified but is preserved at a temperature of about 29° to 30° Fahr., while in the case of the latter, it is kept from shortly after slaughter until the time of retail sale at a temperature of about 10° to 15° Fahr.

Most of the meat imported into this country is "Frozen," the supply of "Chilled" meat coming almost exclusively from South America, and that only in the form of quarters of beef ; the chilling process cannot satisfactorily be applied to mutton as the fat invariably becomes much discoloured, while in the case of beef from Australia and New Zealand, economic reasons would prevent development of imports of this class, mainly on account of the extra room taken on board ship, chilled meat having to be hung up in the ship's hold with sufficient space round it to allow of free circulation of cool air.

Considerable difficulty was at one time experienced in the carrying of meat at the higher temperatures, with the result that on arrival here considerable quantities of meat were found to be unfit for food on account of the presence of moulds, decomposition, rancidity, etc., and had to be condemned. Some years ago, however, the "Linley" system came into use with good results ; by this system a certain amount of Formaldehyde vapour is circulated through the cooled chambers both before and after filling with meat, and then at regular intervals, the air is dried and purified by being circulated over Chloride of Calcium and then over discs of lead moistened with Sulphuric Acid ; one ounce of commercial Formalin is used for each 100 cubic feet of air space and this is volatilised at a temperature of about 300° Fahr.

The following is briefly the procedure adopted in the case of "Frozen" meat : the carcases and quarters are allowed to hang in a "cooling room" for 8 to 12 hours after slaughter, at a temperature of 40° to 50° Fahr. ; the animal heat having thus been removed, they are hung in the freezing chamber, which has been reduced to a temperature of 10° to 20° Fahr. When the chamber is filled, the air is again reduced to about 10° Fahr., at which it is maintained for two or three days in the case of mutton and lamb, and 5 to 6 days in the case of beef ; at the end of this time the meat is thoroughly frozen and is hard throughout. The quarters and carcases are then enveloped in cloth bags and placed in cold stores, also at a temperature of 10° Fahr., where they remain until loaded into the ship.

Conveyance is made from store to ship in insulated vans ; the holds of the ships are maintained at a temperature of about 10° Fahr., as also are the stores in this country, where the meat is held until exposed for sale in the various markets.

The methods used to procure the necessary low temperature for the preservation of meat are numerous, but they may be divided into two main classes, those which use air as their working substance and those in which a liquid is alternately vaporised and liquified during the process. The Cold Air System was the first used and, while satisfactory in its results, has been greatly discarded owing to cost ; it is, however, still claimed that this system has special merits inasmuch as it is without danger, works without chemicals and is suitable on board ship, as there must necessarily always be a sufficiency of the necessary cooling medium.

In this system, the air is compressed in a cylinder, the heat produced by the compression removed by water circulation and the cooled compressed air allowed to expand in another cylinder, or as it is called a "snow box," and then discharged free into the chamber to be cooled.

In the other system, the principle is similar, but liquid is used instead of air, the liquid being usually either Ammonia or Carbonic acid. Here, of course, the vapourised medium does not enter "free" into the room to be cooled, the whole being circulated in a system of closed tubing, and the agent used over and over again, being compressed and cooled each time after it has done its work in the evaporator.

There are three methods by which the cold produced by this expansion of cooled compressed ammonia or or carbonic acid may be applied to the refrigeration of the meat.

In the "direct expansion" method, ammonia is almost invariably used, and the gas is allowed to expand direct into pipes lining the chamber to be cooled.

In the "brine circulation" system, the expansion pipes are immersed in a vat containing a solution of brine (usually Calcium chloride) ; this, when sufficiently cooled, is pumped through pipes in the chambers.

The third system is one in which the expansion pipes are in a special room (technically termed the "battery") the air of which is brought to a low temperature ; continuously flowing over these pipes is a shower of brine, and through this brine, air is driven by means of fans into the various rooms to be cooled.

Each of the systems has its own advocates ; the brine circulation is used almost exclusively on ships carrying chilled meat, and also in some cases of those carrying frozen meat. The direct expansion system is only applicable to freezing rooms ashore, and the "battery" system, without the brine showering over the expansion coils is the one most often adopted at sea.

The Suitability of Frozen Meat as an Article of Food.

The growth of the industry shows the acceptability of frozen meat to the consuming public, and expressions of opinion from authoritative sources indicate that it is a suitable article of diet, and among them that of Prof. Ostertag in his handbook of Meat Inspection is emphatic ; he states—"Cold is unquestionably the best

method of preserving meat; it causes no alteration in the meat either with regard to taste or nutritive value; on the other hand, it improves the quality of the meat considerably. Under the prolonged action of Sarcolactic acid, meat acquires an unusually tender and soft character, the true table maturity required by pampered palates. No hygienic scruples, as in the case of the utilisation of chemical materials, can be entertained with regard to the rational application of cold, and, finally, the effectiveness of cold as a preservative for meat, is almost unlimited. As a sample of the incomparable preserving power of cold, we may mention the fact that the Jakutes still feed their dogs on the meat of mammoths which have remained for thousands of years in the ice of the Lena."

Further, in referring to frozen meat as an army supply, and dealing with meat of various sorts which had been frozen for eight to nine months, he states—"When the meat was taken from the freezing rooms and distributed among the troops, it was found that it not only cooked well, but that it possessed a good flavour and could not be distinguished from fresh meat, furnished a good broth and proved to be especially tender and juicy in a roasted condition."

Dr. W. D. Richardson of the United States h s also conducted numerous experiments towards proving the effects of refrigeration upon meat and the following was the conclusion arrived at by him as given to the International Congress on Refrigeration in 1908:—"Cold storage appears to be the best method of preservation, inasmuch as it modifies to a less extent appearance and and quality of the product than do other methods; that in principle, cold storage inhibits or prevents to a large extent the forces of deterioration, chemical and biochemical, cannot be denied. It is a satisfactory, efficient and safe means of preservation of flesh foods for indefinite periods of time."

In 1910, Dr. H. Martel, of Paris, reporting on the suitability of refrigerated meat, especially for provisioning of the Army, concluded "Frozen and chilled meat has a nutritive value equal, if not superior to fresh meat: it is more digestible by virtue of the maturing which it has undergone, and is particularly useful for victualling an army, navy, large industrial centres, and in general administrations having a large staff."

Effects of Refrigeration upon Meat.

The foregoing are general conclusions arrived at as the result of investigations of various authorities, but I think it well to look more closely to the actual effects of refrigeration upon meat, in order to adduce proof as to whether or not the process leads to any alterations in the structure or composition of the meat which would detract from its nutritive value or suitability for the food of man—these points, after all, being the main ones for consideration from a public health point of view.

In this connection I would deal especially with "frozen" meat, that is, meat which has been kept at a temperature sufficiently low to cause complete solidification (10 to 15° F.), as distinguished from "chilled," which more closely retains a resemblance to fresh meat.

If any alterations occur, they would be the result of bacterial, chemical, or physical action; chemical changes might be due to, or independent of, bacteria, and physical alterations, while possibly modifying the appearance, might be unimportant as long as they did not induce chemical change.

Bacterial.

Bacteria are the usual exciting causes of deterioration of meat, and as experiments prove that, while freezing does not necessarily destroy bacteria, it prevents their multiplication, it follows that meat while frozen is safe from their action, or, to quote from Ostertag—"It appears that bacteria, especially putrefactive bacteria, possess a quite unusual resisting power against low temperatures. This resistance does not in any way militate against the preservative effect of cold. While it is not possible to destroy putrefactive bacteria by cold, we may still prevent their multiplication by means of low temperatures and may keep them in a dormant condition and prevent the development of their proteolytic power."

Assuming that the animal from which the meat was derived was in good health at the time of slaughter, it is usually conceded that the organs and muscles are germ free; of course, prior to freezing, surface contamination, to a greater or lesser extent is inevitable, and then the following questions arise: (1) Can bacteria penetrate into frozen meat, and (2) if present, can they develope and thus injure the meat?

Microscopic examination of properly frozen meat entirely fails to reveal any bacteria below the surface and would contra-indicate their power of penetration. Various experiments have been made in this connection by Dr. Richardson, of U.S.A., and I beg to quote them here: "A tub of water was brought nearly to freezing point in the freezer and then was added three litres of a 10% Wittes peptone solution, which had been allowed to putrefy at a temperature of 2° C.; several beef knuckles were now placed in the tub and the whole allowed to freeze. Thus the surfaces of the beef were in intimate contact with a frozen mass containing immense numbers of putrefactive bacteria; the conditions were ideal for bacterial invasion of the meat, if such were possible at temperatures varying from 9° to 12° C. Up to the present, five months have elapsed, and sections cut perpendicular to the surface show no indication of the power of bacteria to penetrate into frozen meat. Other experiments, along similar lines, such as the introduction of putrefying solution into holes bored in the frozen meat, are in progress, and although they are three months old show no indication of bacterial penetration."

The same investigator has also conducted laboratory experiments to compare fresh with frozen meat in order to determine, by cultural methods, the bacterial contents, and as very few such investigations have been published, and as the results are of interest, I herewith give the details:—

With the usual aseptic precautions, portions of fresh and of frozen beef of varying ages were placed in flasks or tubes of bouillon and incubated at temperatures of 21° and 30° C. To again quote Richardson—"In all cases one flask or tube was contaminated by exposure to the air or otherwise, as a check on the culture medium, and one flask was inoculated with meat taken from the unsterilised outer surface of the piece. These two flasks in all cases showed abundant growth at room temperature, usually in two days. If, after a sufficiently long period, the other flasks (usually eight in number, four from one centimetre below the surface and four from nearer the centre) failed to show growth, they were contaminated by exposure to the air in order to show the possibility of bacterial growth in the medium. In no case under these conditions was there a failure of growth."

The published tables show that, in the case of fresh meat, out of 41 tubes or flasks growth was noted in four at body temperature; with frozen meat 93 days old there was no growth unless from the outer surface of the meat; from that 165 days old there was "a very slowly developing growth in one flask only from interior," and the same from meat 554 days old, while from meat 320 days old, no growth whatever was found; in all, 40 tubes or flasks were used with frozen samples.

The conclusions drawn from these experiments were that "frozen meat, from 93 to 554 days old, is in the same condition bacterially as meat from freshly slaughtered animals; the general distribution of bacteria in frozen meat is disproved. If the cases, where growth is shown, are interpreted as indicating faulty technique, whereby contamination was introduced, then the absence of bacteria in the frozen beef is shown. This is the interpretation put by the writer on the results."

It might be mentioned here that it is the solid condition of the meat and not entirely the lowness of the temperature which inhibits the growth of the bacteria. Another factor which would uphold the contention that bacteria neither penetrates into nor develop in frozen meat is the fact that, on chemical analysis, no increase is found in the amount of Ammoniacal nitrogen, and there would undoubtedly be some increase were there any decomposition present.

It would appear from the foregoing that complete refrigeration prevents any alteration of a bacterial nature from taking place in the meat, and this then limits the possible changes to strictly chemical or physical ones.

Chemical.

The purely chemical changes in meat, partially due to enzymes, opens up a large field for investigation, and I do not propose doing much more than giving the general conclusions arrived at by the various investigators.

Richardson has conducted exhaustive analyses of fresh and frozen meat with a view of determining chemical differences; these were made with fresh meat on the one hand, and with frozen meat from 33 to 554 days old on the other—the latter having been previously kept at temperatures of 9° to 12° C.

In all, 12 samples of fresh and 13 of frozen beef were analyzed, and the average results were practically similar, so much so that Richardson's conclusion was as follows:—

"A general inspection of the tables shows very little difference between the analyses of fresh and frozen samples; the variations in the individual fresh samples are hardly greater than would be expected in material of this kind into whose composition so many factors enter, and the differences between maxima and minima in fresh and frozen samples are of the same order. In general, the variations do not tend definitely in one direction in the frozen samples, the Ammoniacal Nitrogen, the coagulable Nitrogen and the albumose Nitrogen figures do not show a progressive tendency to increase or decrease. The largest differences between the analyses of fresh and frozen samples occur in the acidity figures, which are larger on the average by a small amount in the case of the frozen samples, but even here no progressive tendency is shown, and it is possible that the analyses of a larger number of samples would produce agreeing averages in the case of acidity."

Dr. Martel, Veterinary Surgeon, of Paris, has also given this question some consideration, and in 1911 at the Second Congress on Refrigeration, read a paper in which the following appeared:—"Among the fermented products of meat, there exists a sort of trypsine which acts even during life, because the peptone which is found in meat juice does not appear to be all formed after death; if this self-digestion in the meat is prolonged, it makes it tender and easily digested. The action of a cold temperature varies according to the degree of refrigeration attained; it is known that Pepsine does not act below freezing point and that Trypsine acts very slightly at that temperature, especially in an acidulated substance such as meat. When meat is preserved long enough at temperatures below 0° C., the alterations which still take place are not of such a kind as to lessen its nutritive value."

Dr. Rideal, dealing with the same subjects, states: "In the same way, the tenderness and maturing in refrigerated meat is attributable, not only to the imputed action of Sarcolactic Acid, but to the very gradual and limited work of natural enzymes, of the nature of pepsine and trypsine present in the flesh, which cause a certain amount of predigestion similar to that occurring when fresh meat is kept or "hung" by butchers before sale. This is why refrigerated meat when thawed is usually ready for immediate consumption and does not require keeping."

Dr. Rideal has also carried out experiments to decide whether freezing meat had any effect on its digestibility, in this case fresh and frozen mutton were experimented with as follows; the lean meat, exclusive of fascia, tendons, etc., was passed uncooked through a mincer; 20 grams of the minced meat were digested for one hour at 38° C. with 20 c.c. ofa 5 per cent. solution of Pepsine, to which was added 1 c.c. decinormal hydrochloric acid and 50 c.c. distilled water. The experiments were carried out in duplicate and the results obtained are summarised in the following table:—

	Fresh.	Frozen.	Frozen.
Water per cent.	74·25	72·45	71·32
Nitrogen contents of dry meat ...	12·38	11·55	11·39
Percentage of dry meat digested in one hour:			
Exp. No. 1. ...	41·2	37·4	37·2
" 2. ...	43·3	38·6	37·25
Mean	42·25	38·0	37·25

Dr. Rideal summarises as follows:—

"The amount of digestion in these experiments is therefore very nearly the same for each kind of meat, and is proportional to the amount of matter capable of digestion as measured by the quantity of nitrogen existing in each kind. These slight variations in the amount of nitrogen might be due to variations in the amount of fat existing in the samples examined, and would point to the conclusion that the frozen mutton used for these experiments was slightly fatter than the fresh.

A similar experiment was also carried out some years ago by Dr. Bernard Dyer, President of the Society of Analysts, and the results were similar, fresh mutton showing 43·78 per cent. of water and 40·53 per cent. of nutritive matter devoid of moisture, as against 46·17 per cent. of water and 39·37 per cent. nutritive matter in the frozen samples.

It would therefore appear that meat, frozen under proper conditions, is bacterially, chemically, and from a nutritive point of view, similar to that freshly slaughtered.

Physical Alterations.

There only remains now the physical alterations which take place on account of freezing and the necessary subsequent thawing, but as previously indicated, these are unimportant, as they lead to no chemical or nutritive change.

It is frequently stated that, in consequence of freezing, the muscular fibres are ruptured with the result that, when thawing subsequently takes place, the liquid contents escape, but this is not the case when meat is properly handled. Microscopic examination of frozen meat, after proper thawing, fails to reveal any material difference structurally from what is found in fresh meat; this is mentioned by Dr. Martel, who quotes the experience of Dr. Letulle—"The latter, who has made a close microscopic examination of sections of frozen muscular fibre, has stated that it is perfectly intact, and that neither crystal of ice nor any sort of breaking up of the fibre can be discerned."

Other observers, however, state that freezing does alter the histological constituents of meat, but it is possible that their conclusions were the result of faulty technique; for example, if the section were made while the meat was in a frozen or partially frozen condition, then undoubtedly abnormal appearances would be evident, and the same would apply if the meat were thawed too rapidly.

When meat is frozen, the water, instead of freezing within the cell, freezes outside of it in a state of considerable purity, leaving the muscle fibres isolated and distorted, and if microscopic examination be made while in this condition, one might readily form a wrong conclusion, as the ice areas occupy as much or more space than the compressed muscle fibres. This is practically the same as has been observed in the freezing of plants.

If meat is quickly thawed, the fibres do not seem able to reabsorb the liquid, with the result that a portion of it exudes, but if on the other hand thawing is done slowly, practically the whole of the juice is reabsorbed, and the meat thus resumes the appearance and characters of fresh meat.

In support of the contention that freezing does not result in the rupture of the cellular elements, it may be mentioned that fish, toads and frogs, if frozen in ice and thawed gradually, regain their vitality, that fish frozen in ice and cooled to 15° C. regained vitality when thawed, and that frogs withstood a temperature of 28° C.

I have now dealt with normal conditions, and have endeavoured to prove that when properly handled, refrigerated meat, bacterially, chemically and physically does not materially differ from fresh meat, that the freezing process does not detract from its nutritive value, and that therefore it is a suitable article of food.

(*To be continued*).

WESTERN COUNTIES VETERINARY MEDICAL ASSOCIATION.

The 30th annual meeting was held at the Royal Clarence Hotel, Exeter, on Thursday, the 27th April, when the chair was occupied by the President, Mr. R. J. Collings, of Exeter; others present were Messrs. F. P. Bennett, Paignton; W. H. Bloye and P. G. Bond, Plymouth; E. W. Bovett, Bridgwater; J. Dunstan, Liskeard; G. H. Elder, Taunton; G. H. Gibbings, Tavistock; G. Lansley, Axminster; W. B. Nelder and Wm. Roach, Exeter; P. Penhale and R. G. Linton, Barnstaple; R. E. L. Penhale, Torrington; Wm. Penhale, Holsworthy; W. L. Richardson, Wadebridge; W. P. Stableforth, Colyton; E. J. Thorburn, Crewkerne; H. E. Whitemore, Langport; and Wm. Ascott, Bideford, Hon. Sec.

The minutes of the last meeting were read and confirmed.

Apologies for inability to attend were received from Prof. Hobday, Messrs. A. J. Down, C. H. Golledge, F. T. Harvey, T. R. Lydford, S. J. Motton, C. C. Parsons, G. Parker Short, E. R. Smythe, and T. J. Vickery.

Correspondence. The Hon. Sec. reported that Sir Stewart Stockman had very kindly invited the members of the Association to the Laboratory of the Board of Agriculture for a demonstration of methods of diagnosis, etc., in connection with Epizootic Abortion. It was unanimously resolved that Sir Stewart be heartily thanked for his kind offer of the demonstration, and that same be accepted, at a date quite convenient to himself.

Royal Sanitary Institute Congress at Leeds. Letters from the Secretary and Prof. J. Penberthy were read, and Messrs. C. E. Perry, of Bristol; W. P. Stableforth, of Colyton, and Wm. Ascott, of Bideford, were elected as delegates.

Fees of Veterinary Inspectors.

Further correspondence with Mr. T. C. Toope of the Southern Branch of the National Veterinary Association was read, and it was resolved that the scale of fees recommended by the Council of the Association be submitted to the County Councils of Devon, Cornwall, Somerset, and Dorset.

The scale of fees to veterinary surgeons for service rendered to insurance companies, advocated by the South Eastern Veterinary Association was also approved.

The Hon. Treasurer was empowered to remit the affiliation fees to the National Association.

10th International Veterinary Congress, London, 1914. The Hon. Secretary reported, that as directed at the last meeting, he had sent out an appeal for subscriptions to the members of the Association, and remittances were being made to the Hon. Treasurer of the Congress, direct.

Finance. The Hon. Treasurer (Mr. P. G. Bond) presented the annual Report and Balance-sheet, and on the motion of Mr. Wm. Penhale, seconded by Mr. Elder, the same was approved and adopted.

Election of Officers.

On the motion of Mr. Bloye, seconded by Mr. G. H. Elder, Mr. C. E. Perry, of Bristol, was unanimously elected President for the ensuing year.

Vice-Presidents. Messrs. R. J. Collings, Exeter; W. L. Richardson, Wadebridge; W. P. Stableforth, Colyton; and E. J. Thorburn, Crewkerne, were elected.

Hon. Treasurer and Hon. Secretary. Mr. P. G. Bond and Wm. Ascott were re-elected respectively, and each cordially thanked for past services to the Association.

It was resolved that the proposed visit to the laboratory of the Board of Agriculture be treated at the next meeting.

The New Tuberculosis Order.

Mr. Dunstan, in opening the discussion on this matter, read a letter bearing thereon, and also referred to a "leader" in *The Veterinary Record* of March 15th last. He said "The various County Councils are at present quite at sea and yet those bodies will have to take the necessary steps to carry out the Order as and from the 1st May. In my opinion they will only be too glad to be offered assistance, and I propose that each County Council be asked to meet a deputation from the veterinary profession. The term "inspectors" clearly includes veterinary inspectors, but in Cornwall inspectors are not appointed, and similar "Orders" are carried out through the police. I have taken steps to bring this to the notice of the County Council, and inspectors will probably be appointed. Power is given to veterinary inspectors to take samples of milk, etc., for examination by bacteriological methods, but these methods are not clearly defined. Are microscopical examinations intended, or not? or is the tuberculin test to be relied on? At present it seems likely the final diagnosis may pass to the Medical Officers of Health, but we should do our best to prevent this. The day is not far distant when each county will appoint veterinary inspectors, and I hope we shall be able to-day to formulate our suggestions to the County Councils.

Mr. Gibbings: I think the question of diagnosis will prove one of the greatest difficulties. It is evident that by clause 6 a bacteriological examination is meant, for without it how can you say whether a cow is giving tuberculous milk or not. Even if the udder is not affected a cow may give infected milk. The tuberculin test is not to be allowed without the consent of the

owner. I do not see how the County Councils are going to help us, as we are unable to help ourselves.

Mr. BLOYE: I should like (as an outsider, because I am not an inspector) to say a few words. The new order is a most important one to the profession, and much more is involved than appears on the surface. A most onerous task is imposed, and with all due respect, I think it is absurd to ask an ordinary practitioner to diagnose tubercle from milk. The ordinary medical practitioner of to-day is incompetent to carry out such work, and to be reliable it must be done by a bacteriological specialist. This order is thrust upon us at very short notice, and the only solution to prevent the work slipping out of our hands is to ask the County Councils to appoint whole time veterinary bacteriologists. There would be plenty of work for such men; they could receive and report on all slides. Another solution that presents itself to my mind is to ask the Board of Agriculture to undertake the examinations, but I doubt it would be agreed to, as that body seem to be shifting the responsibility to the County Councils.

Mr. BENNETT: I have much pleasure in supporting Mr. Bloye's remarks. I do not see why the general public should expect so much from our profession, and I think it is absolutely impossible for the general practitioner to undertake the necessary bacteriological examination.

Mr. WHITEMORE: I think the idea of appointing whole time veterinary bacteriologists a good one. I am not clear as to the interpretation of local authorities; are urban district and rural district councils to deal with the matter?

Mr. LANSLEY: I take it the County Council would be the "Local Authority" as defined in the Order.

Mr. DUNSTAN: Cornwall has a special county medical bacteriologist. It has been suggested that the College extensions will help us.

Mr. BOND: Mr. Chairman, I think there is a lot to be done before this matter is settled. The Government intended to provide £600,000, and to divide England into 12 centres; and samples to be sent to these centres to be dealt with by an expert officer in charge, who may be a veterinary bacteriologist or not. If we send a deputation to the Devon County Council, who is going to meet it? Probably the Contagious Diseases Committe, who know little or nothing about the subject. When the question of the tuberculin test was first introduced in the House of Commons, Mr. Balfour said a test could be made for a 1/- or 2/6, which proves my contention that the men who are responsible for this and similar orders are ignorant of the practical working of them. If all suspected material is to be sent to the testing centres, who is going to do all the other work?

Mr. BENNETT: Supposing in the first week in May we are sent to inspect a dairy, what as individuals are we going to do? It is by no means an easy matter. I have to superintend two dairies, and I find this makes considerable work. Also we must remember the butcher follows if we condemn, and will expose our mistakes.

Mr. R. E. L. PENHALE: I travelled up with a member of the Devon County Council and gathered from a conversation with him on the subject that they would be pleased to receive a deputation from our Association, as they do not understand the position created by this Order. They are quite at sea, and do not know the many pitfalls.

Mr. ASCOTT: We are, I think, in the centre of a crisis with regard to contagious diseases, and the manner in which this subject is treated by our profession will either make or mar it. The County Councils are getting pretty tired of the expense attending the working of the Epizootic Abortion Order, and we should endeavour to make our position quite clear. I agree with the idea of sending a deputation, but don't think we shall succeed in getting a veterinary bacteriologist appointed (we cannot even suggest a man who could undertake the work) and will probably be told to send samples to the County Medical Officer of Health.

Mr. PENHALE: I sympathise with all that has been said by previous speakers. We must make ourselves familiar with the work, and endeavour to tackle the job in a thorough manner, or no doubt the medical profession will step in and take it away from us. My own opinion is that the medical practitioner is not more competent with microscopical work than the veterinary surgeon, and I do not like idea of our having to send our slides to the City analyst. I see the County Council are considering the question of expenses, as each case of abortion is costing the county £5. I think there will be no harm done in sending a deputation to the County Council; we should probably have to meet a doctor or two, who knows less about the subject than we do.

Mr. DUNSTAN: I notice the Order provides for two distinct valuations—first value as a milch cow, and second meat value only.

Mr. GIBBINGS: As a milch cow, might be worth £15, but otherwise £5.

The following were appointed a deputation to endeavour to arrange meetings with the Devon, Somerset, and Cornwall County Councils: Messrs. Perry (President), Bloye, Bond, Dunstan, Elder, Stableforth, and Wm. Ascott.

Mr. BLOYE: I beg to move "That the Board of Agriculture be approached as to the examination of suspected material; or failing their doing so that they be asked to support the appointment of a county veterinary bacteriologist, and that the Royal Veterinary College be asked if they would be willing to undertake the task, and if so, on what terms." Great weight would be attached to any recommendation from the Board of Agriculture."

Mr. DUNSTAN: I have much pleasure in seconding but am afraid there is not time.—The resolution was unanimously agreed to.

On the motion of Mr. Whitemore, seconded by Mr. Bond, a hearty vote of thanks was accorded the retiring President for his services to the Association during his year of office.

Since the above meeting the deputation appointed have meet the Contagious Diseases Committee of the Devon County Council, who received them very courteously, and agreed to the scale of fees laid down by the National Association, except that third class railway fares only will be allowed.

WM. ASCOTT, Hon. Sec.

Rinderpest in German East Africa.—Conference of Veterinary Surgeons.

The Conference of Government Veterinary Surgeons representing all the British South African States and Dependencies, and British East Africa, Portuguese East Africa, the Mozambique Territory, and the Belgian Congo, opened on Thursday, April 10th in the Municipal Offices, Bulawayo.

Mr. J. M. Sinclair, Chief Veterinary Surgeon of Southern Rhodesia, presided over the deliberations of the Conference; and the following delegates were in attendance:—British East Africa: Mr. R. J. Stordy; Nyasaland: Mr. G. Garden; Mozambique Territory: H. L. Jones; Portuguese East Africa: Senor J. B. Botelle; Union of South Africa: Mr. C. E. Gray, Mr. William Robertson; Swaziland: Mr. G. H. Elder; Basutoland: Mr. F. Verney; Bechuanaland: Mr. W. H. Chase; Belgian Congo: M. M. Vanraes; Northern Rhodesia; Mr. F. Chambers; Southern Rhodesia (in addition to Mr. J. M. Sinclair), Mr. C. R. Edmonds.

When the members of the Conference assembled, the Mayor (Colonel Baxendale) was present to welcome them, and there was a large and representative gathering of citizens.

The MAYOR, in extending a cordial welcome to the delegates, mentioned that this was the first conference of the kind held in Rhodesia. He recalled the decimation caused in Matabeleland by the rinderpest outbreak in 1896. In the year prior to the disease making its appearance there were, he said, something like 300,000 head of cattle—native cattle; two years later there were only 2000 head. Since then the country had gradually retrieved its losses until now the number of native cattle in the country was over 130,000. He mentioned these facts to show how Matabeleland would be affected in the unfortunate event of another outbreak, and to show how imperative it was that they should be fortified to meet the contingency, and how essential it was that there should be concerted action on the part of all the South African Governments. They welcomed the delegates because they realised the importance of the work to the whole of South Africa, and also because they appreciated the especial necessity for a great cattle country like Matabeleland being prepared to combat a terrible scourge of this kind. In conclusion, his worship expressed the hope that the delegates would have an enjoyable time while in Bulawayo, and that the result of their deliberations would be satisfoctory and beneficial to the whole of the Sub-Continent.

MR. SINCLAIR, on behalf of the delegates, thanked the Mayor for his warm words of welcome and the gentlemen who had assembled in such large numbers to witness the opening of the conference. As the Mayor had told them, the object of the meeting was to consider measures for dealing with rinderpest should it unfortunately appear in any of the Provinces and Territories represented there. Most of the delegates had had practical experience in dealing with rinderpest, and were well acquainted with the ravages of what might be called the worst of the bovine scourges. When the disease was destroying herds in this Territory and in the Transvaal in 1896, the Cape Government, they would remember, with the assistance, he believed, of the other South African Governments, obtained the services of the illustrious Koch. After a few months' stay in South Africa, Dr. Koch discovered the bile treatment, and it might be taken as a fact that Dr. Koch laid the foundation for all the work which had since been done in combating rinderpest. Many other observers had followed him and elaborated his work, among whom might be mentioned Kohlstock, Koller, and Turner, Theiler, Watkins-Pitchford, Danyz, Bordet, and their friend—who was with them to-day—Mr. Robertson. The result of the labours of these distinguished scientists were considerable, and he thought he could say that their knowledge of rinderpest to-day was such that the methods of treating the disease by inoculation was very satisfactory—more satisfactory than in regard to any other of the bovine scourges. This Conference had been convened by the High Commissioner to discuss measures for application in the event of the disease breaking out in any of the countries represented.

It could more properly be called a committee meeting than a conference, because the methods devised of combating the disease by serum treatment were so satisfactory. It was rather their business to arrange a plan of campaign. The results of their deliberations would be submitted to their respective Administrations, and on the amount of money provided by the Administrations would depend to a large extent the result of what they did at the conference. Having regard to the importance of the subject, it had been considered advisable to hold the proceedings in private—reports of their proceedings would not appear from day to day in the press. The reason was obvious; if reports were published daily, it might lead to hasty criticism. He thought, then, the proper procedure was for them to submit their decisions to their respective Governments; and the result would be communicated to the press in due course. At the same time, though the conference was to be held in private, they would be glad to welcome any gentlemen interested in their discussions. There was another point he would like to mention. These conferences were not of every day occurrence in South Africa—it was over four years since the last was held, in Pretoria—and it would be rather a pity to let the opportunity pass of discussing various other subjects, not only of interest to themselves, but of the greatest economic importance to the whole of South Africa. He referred to such diseases as lung-sickness, tuberculosis, and so on. It was therefore proposed that they should discuss these matters when they had completed their deliberations on rinderpest. It was also intended to hold a meeting here of members of the veterinary profession to consider matters of general interest to the profession, particularly the official status of the profession in Africa.

Proceeding, Mr. Sinclair said he wished to emphasise one point. The fact of their holding the Conference in private might suggest the idea that the position in regard to rinderpest was so serious that they feared to take the public into their confidence. Well, he could assure them that was not the case. The position in German East Africa, according to the latest information, was practically the same as it was in December; the disease had not extended further South since the middle of December. He might mention also that arrangements had been made with their German colleagues that they should advise him directly should the disease make any further advance Southwards, and they could rely on any further developments being made known through the medium of the press. He regretted exceedingly that their German East Africa colleagues were not represented there; their recent experiences and observations would have been of the greatest help. It had been arranged that a message conveying the good wishes of the Conference should be sent to the Government Veterinary Surgeons in German East Africa, and that a copy of the proceedings should be forwarded to them.

The business of the conference was then proceeded with.—*The Bulawayo Chronicle*, April 11.

Bovine and Human Tuberculosis.

At a meeting of the Berliner medizinische Gesellschaft held shortly before Easter, Professor Orth, formerly a pupil of Virchow's and now his successor, opened a discussion on the etiology of tuberculosis in man. His views, not only in virtue of his position as a pathologist, but by reason of his being chairman of the society, had been eagerly awaited, and were listened to with the greatest interest by the members present. The address was on the importance of the bacillus of bovine tubercle in the production of tuberculosis in man, and in it he strongly emphasized his conviction that, although bovine tuberculosis does not commonly infect the adult, its power to produce tuberculosis in children and infants cannot be denied, and that in consequence a campaign of extermination of the disease in cattle must be our aim in the future. He thus departed from the thesis of Koch's famous pronouncement in London (1901), and maintained that not less than 10 per cent. of all fatal cases of infantile tuberculosis originate from a bovine source, while, according to the estimates of Koller and Wassermann, fully 40 per cent. of cervical gland tubercle and 49 per cent. of intra-abdominal cases are directly due to infected milk. Bendix states that in Germany alone 2,700 bottle fed infants perish annually from

tuberculosis, so that the term "race" disease would hardly be exaggerating the present position. The question of the convertibility of the one bacillus into the other was decided, he claimed, in the positive sense by von Ebor, who in 1912, at a meeting of the Royal Institute of Public Health held in Berlin, announced that he had been able by one or more passages through cattle to produce from adults (36 per cent.) and children (53 per cent.) a virulent bovine bacillus. Professor Orth reminded his hearers that in 1906 he had experimentally shown that a primary local infection with inoculated bacilli could create a heightened, latent susceptibility to future infections, and that under such circumstances pulmonary phthisis was the most usual sequel. That a bovine infection contracted in infancy might play a similar part in the development of the disease in adult man was no unreasonable speculation. Professor Orth expressed the general trend and conclusion of his address in the words, "War against the human bacilli, but war also against the bovine." His views were criticised by Weber, a member of the Imperial Health Commission, which has only recently abandoned Koch's beliefs for views more nearly akin to those of Orth. Weber stated that post-mortem reports and experimental investigations had shown no recognizable parallelism in the incidence of the disease in man and cattle, nor were there any marked differences in the statistics of countries in which cow's milk was not the staple diet of bottle-fed infants and children. Of considerable importance to his argument was the fact that of 280 children who had demonstrably drunk the milk of tuberculous cows, only two, and both of these cases in which the cervical glands were involved, had developed the disease subsequently. Moreover, seven years later, during which time they had been under the direct observation of the Board of Hygiene, not one of the 280 had died of tuberculosis.—*The British Medical Journal.*

Poisoning with "Muttar" Vetch.

At Lincoln County Court before His Honour Judge Sir George Sherston Baker, bart., Mr. Colin Campbell, J.P., the well-known Stapleford farmer, sued Messrs. Sheardown, Tibbitts and Co., of Hull, corn merchants, for £100 for breach of warranty, the claim arising out of the death of two of plaintiff's horses and three foals, and the depreciation in value of others, and his contention that this was due to the presence of mutter, and mutter being a poison, in a consignment of Indian peas purchased from the defendant firm.

After the plaintiff and his farm foreman, John Ford, had been heard, George Drury, waggoner, said he always tried to give the horses plenty of food, and cross-examined admitted he did not know the quantity of pea meal that should be given.

Mr. Charles Alfred Nowell, Bassingham, practising as a veterinary surgeon, who was called to examine the horses, said that in his opinion the symptoms he saw in May and July were caused by the foreign food they were eating, and by the presence, of which he had learnt since, of the *lathyrus sativus*.—Cross-examined, he said he performed tracheotomy on one of the mares, but it died two or three months later.—Cross-examined, as to feeding, he admitted he knew nothing about albuminoids.

Mr. Edward Murray, M.R.C.V.S., of Malton, deposed to being called to see the mares in July, and said he was satisfied they were suffering from a definite poison. Having since learnt of the existence of the *lathyrus sativus*, he thought it perfectly clear that the symptoms were due to that. They were not due to overfeeding.—Cross-examining, Mr. Maddocks said that if a man drank a whole bottle of whisky and died of alcoholism, there was nothing in that to condemn whisky.—Witness agreed, and answering later questions said he formed the opinion that the animals were being poisoned, the poison arising from the food, and advised that the food should be submitted to an expert with a view to arriving at the particular poison.—Re-examined, he was now absolutely certain that the symptoms were caused by the presence of the *lathyrus*.

Professor Woodruff's evidence was taken on commission, as the witness has been appointed to a professorship at Melbourne in botanical pathology. The evidence, read by Mr. Dyer, stated that on visiting plaintiff's farm witness had no difficulty in recognising amongst the peas one particular variety, namely, *lathyrus sativus*, or mutter. He had a sample, about half a pound in weight, of the peas weighed out for him, and found mutter among it to the extent of 13½ per cent. He should certainly not consider it should be put in fodder for horses. It produced paralysis of the nerves of the larynx, shown on exertion. Witness had never had experience of such a case before with a living animal. He had no doubt now that the cause of what he saw was the presence of this mutter. He sent for another sample, and again found mutter present. Mr. Maddocks read his cross-examination, in which the witness stated that mutter was an article of food in India, and was a fattening food.—Re-examined, he had said mutter where present was always dangerous, though fattening. He would not pass it for feeding. In his reference to mutter as an article of food in India, that was after cooking.

Mr. Edward Morrell Holmes, Curator of the Museum of the Pharmaceutical Society, Bloomsbury Square, Fellow of the Linnæan Society, found *lathyrus sativus* to the extent of 40 per cent. in the sample of Indian peas submitted to him by the plaintiff. Witness described the differences in percentage in different samples by explaining that the shape of that pea did not permit it to roll like the ordinary pea. He had known for thirty years that the *lathyrus sativus* had poisonous properties, and would say that unquestionably it was harmful or at least dangerous for man and beast. It was not actually known what the poison was, but no other known drug produced the same effects. He had no reason to doubt the poisonous effects of *lathyrus sativus*. That was an accepted fact in the botanical world. Those effects tended towards paralysis.

Cross-examined by Mr. Maddocks as to the relative values and dangers of food products, witness said the soya bean contained higher fattening properties than mutter, and would not be poisonous. A beef steak was poisonous if one took too much of it. If a small percentage of mutter was taken the results would not be perceptible at first; if taken for a length of time 13 per cent. would be poisonous.

Mr. A. B. Porter, of Messrs. Page and Porter, gave evidence as to the distribution of samples of plaintiff's consignment of peas to various people, and was closely cross-examined as to their whereabouts.

Mr. King, M.R.C.V.S., veterinary surgeon, inspector to the county of Berkshire, said his attention was drawn to the *lathyrus sativus* pea as far back as 1882, some horses then suffering from apparently the same symptoms, and he found they had been having this pea as food. He would state most emphatically that no known drug or food or combination of them could produce the same symptoms. It was very different to overfeeding. He had no hesitation in saying that the loss and illness of these horses was due to their feeding on the *lathyrus sativus*.—Cross-examined, he would say that 15 per cent. was dangerous, and if continued for a long time would be poisonous. His condemnation of it would all depend upon the quantity that was given, and the length of time during which it was administered.

Mr. Alfred Smetham, analytical chemist of over 30 years' experience in Liverpool, and holding an appointment of that character with Royal Lancashire and Cheshire Agricultural Societies, and for the county of Westmoreland, deposed to experience of the *lathyrus sativus* with horses as far back as 1893. A number of the horses of the Bristol tramways died, and a great number of others were ill, and the symptoms were similar to those described in this case. There was an action at law, and as the result, judging from the number of samples received by him for analysis, the importation for a time almost ceased. His investigations since convinced him that if given in a large quantity it was a deadly poison. The sample of plaintiff's peas submitted to him contained 36·08 of *lathyrus sativus*.—Cross-examined, witness said that while there was a doubt as to what the poison was exactly, there was no doubt as to the effects of it. He could not say whether it was an alkaloid, but he thought it proved that it was a cumulative poison. The seriousness of the effects would depend upon how often the *lathyrus sativus* was given; it could be given safely between intervals, but he would not state intervals. In the trade, as contracts were made in Liverpool, if two tons of Indian peas—green peas—were ordered, 15 per cent. of mutter would be accepted, under the contracts, by the rules of the Liverpool Exchange. Witness was official analyst to the corn trade in Liverpool. Any percentage of mutter higher than that would be accepted at an allowance. That applied also in London and Hull. Witness considered that 15 per cent. might cause damage. Indeed, he considered it ought not to be sold, and could not be sold properly under the Acts of Parliament which governed the sale of fertilisers and feeding stuffs. He had reported against *lathyrus sativus* to the Board of Agriculture. That was two years ago, but the Board had taken no steps that he knew of. "They know a good many of my views and take no action," smilingly remarked the witness.

Re-examined by Mr. Dyer, witness said this stuff was not a good horse food, and any food to be a good horse food should be one that could be given without intermission.

Dr. Jno. Augustus Voelcker, M.A. Cambridge University, B.A. London University, consulting chemist to the Royal Agricultural Society of England, was the last witness for the plaintiff. He said that in 1889 he went out to India for the Government of India for the express purpose of inquiring as to the improvement of agriculture in that Empire. He made special inquiries regarding *lathyrus sativus*, and found that in India, all through the country, it was considered a dangerous food for cattle and human beings. In every case in this country that he had investigated since his return, of horses and cattle suffering from paralysis and such other symptoms as described in this case he had found *lathyrus sativus* present. He considered it a deleterious substance, and had done all he could to advise people not to use it in any quantity at all. Feeding with excessive albuminoids would not produce paralysis. In this case, having examined the material sold, he had no doubt that the paralysis was due to feeding on grain containing *lathyrus sativus*. In the sample sent him he found rather over 13 per cent. of it, and would regard that as not a good food for horses, but a risky food.

Cross-examined, witness said he would go lower than even 5 per cent. He would say that even 2 per cent. was risky. His opinion was that the poison was cumulative. He condemned it *in toto* as a material that ought not to be used as a food. It was risky—therefore don't touch it. Under some conditions it might be a good article of diet. In India it was a grain they did not touch unless they were obliged by famine to do it.

Mr. Maddocks, after the luncheon adjournment, opened his defence, and at the outset pointed out that the peas supplied had been used, either for the horses or for the pigs, and therefore had been proved merchantable, so that that portion of plaintiff's case had gone. Proceeding, Mr. Maddocks denied that any such warranty was given as stated by the plaintiff; after hearing the properties of the peas described by Mr. Tibbits, plaintiff said that would make a good horse food, and Mr. Tibbits replied that they did not recommend it for that. Mr. Campbell, however, bought 20 quarters, and not until they came into Court was there one word to suggest that there was any warranty as to the value of the peas for horse food. Mr. Tibbits had given no such warranty and would say so in the box. Mr. Tibbits warned plaintiff against using the peas for horses, as being too heavy a food. Mr. Maddocks pointed out that sellers were not manufacturers very often, and should not be held responsible for the misuse of an article by a buyer, who might employ it for something totally different to what it was intended for. Mr. Campbell had looked at the peas and saw they were different to English peas, but had not chosen to ask what their properties were. The peas had a bad effect on the horses because they were given in too great quantities. Mr. Maddocks proceeded to point out that though caffeine affected the heart, coffee was perfect good, and though tobacco was quite good, an overuse of it was dangerous. He urged that the symptoms of these horses were the result of over-feeding. If plaintiff had asked about the peas and given them in small quantities the horses would have been fattened and benefited. Mr. Smetham and Dr. Voelcker said they would not use mutter at all, but if that was so, if what those witnesses had said was true, still the defendants were not liable, because a certain percentage of mutter was permitted in Indian peas. Mr. Campbell asked for Indian peas; they sold him Indian peas. In the trade Indian peas meant that the person who bought must accept from the person who sold Indian peas with no greater admixture than 15 per cent. of mutter. That was the practice of the trade. If that was not understood by Mr. Campbell, that was not the fault of the seller; that was the trade usage, and, with all respect, the jury must come to that conclusion. If they found there was that proportion, they completed their contract, and what ill effects followed did not concern them. If he fulfilled his contract and forty people died, that did not concern him. The witness Ford had said he had weighed out a certain quantity per horse, and that quantity his own expert had said was twice too much. He (Mr. Maddocks) submitted that the horses had actually been given a good deal more than twice too much.

Mr. Tibbits, of the defendant firm, deposed to the terms of the purchase, and said that later the plaintiff complained that his horses were ill and he blamed the peas. Witness replied that he could take no responsibility, as the horses must have been overfed. Witness had in no way warranted the peas for horses; he had warned them against giving them to horses. They were too rich in albuminoids. At the time he was selling plaintiff the peas he (witness) knew the peas contained *lathyrus sativus*, but did not tell the plaintiff so. He did not believe the *lathyrus sativus* was poisonous.

The evidence of Mr. William Wilson Pietrie, of Ralli Bros., Finsbury Circus, read on commission, was taken. This witness said that 13 per cent. of mutter was quite a moderate proportion. His firm had sold 4,800 tons of Indian peas during the year 1912. He did not know for what purposes they had been used. He had seen muttar cooked and eaten by the natives in India. He knew it had an evil reputation there, bringing on paralysis when used in too large quantities.

Mr. G. W. Heseltine, managing director of J. and A. Scott & Co., Hull, with thirty years' experience of the trade, told His Honour that the trade understood green peas to mean the inclusion of 15 per cent. of mutter. Witness deposed to buying 5,000 quarters of Indian peas, of which he had sold 2,500 quarters to Sheardown, Tibbits & Co. This was the only complaint. Witness took a sample, which was under 15 per cent.

Cross-examined, witness said there was a wider and increasing demand for green peas. Even after hearing what he had heard that day, he still thought mutter harmless.

Mr. Dawson, of Rishworth, Ingleworth, and Lofthouse, millers, Hull, with 35 years' experience, gave similar evidence, and said he did not recommend peas of any kind for horses.

Dr. Auld, Professor of Agriculture, F.I.C., F.I.C.S., with eight years' researches into the formation of poisons in foodstuffs, said no toxicologist could give a definition of the term poison. He had been experimenting on a horse, a cob, for the past five weeks with mutter, and he thought it had improved. He would not recommend peas for horses. Overfeeding with *lathyrus sativus*, he agreed, would produce paralysis.

Mr. Harry Thompson, F.C.S., consulting and analytical chemist, Hull, analyst to a number of farmers' clubs said he received a sample of green peas from Sheardown Tibbits & Co., and found 13½ per cent. of mutter. Unless horses were grossly overfed, he did not think that would do them any harm.

Mr. George Robert Simpson, Driffield, M.R.C.V.S., said on Nov. 16th he visited plaintiff's farm and examined the horses. He found that the quantity of peas given was most excessive.

Mr. Mason, another veterinary surgeon, with experience at home and abroad, in the Army and as a civilian, said the giving of Indian peas containing 15 per cent. of mutter in small quantities would not be injurious, but overfeeding would be injudicious, and they must expect what they had heard. Used it was all right; abused it was all wrong.

Mr. Battle, farmer, Potterhanworth, said in 1911 and 1912 he purchased from the defendants about 120 quarters of Indian peas for about twenty horses and other animals. The horses improved in condition, and he had no bad results.

Mr. Gourlev, farmer, Newton-on-Trent, who had also had Indian green peas from defendants to the extent of 25 quarters, said he fed his working horses on it, and had no bad results; quite the contrary. Similar evidence was given by Mr. Riggall, farmer, Hackthorn, and this concluded the case for the defendant.

Mr. Dyer addressed the jury, arguing that there was a warranty, and that the Indian peas were specifically recommended, but that the warranty was broken. He thought everybody agreed now that *lathyrus sativus* was a poison, though the chemist could not put a finger upon it and say specifically what that poison was Mr. Campbell may have had a bad sample. His horses might be predisposed to the effects of it, but that did not affect the question. Mr. Dyer also dealt with the suggestion of overfeeding, and contended that there had been no overfeeding, and that every lot of the meal had been carefully weighed and given out. In closing, Mr. Dyer claimed to have proved his case thoroughly, and asked for a verdict.

The Jury disagreed.—*Lincolnshire Echo.*

DISEASES OF ANIMALS ACTS 1894 TO 1911, SUMMARY OF RETURNS.

Period.		Anthrax. Outbreaks Con-firm'd	Anthrax. Outbreaks Re-ported	Anthrax. Animals Con-firm'd	Anthrax. Animals Re-ported	Foot-and-Mouth Disease. Out-breaks	Foot-and-Mouth Disease. Ani-mals.	Glanders † (including Farcy) Out-breaks	Glanders † (including Farcy) Ani-mals.	Parasitic Mange. Out-breaks	Parasitic Mange. Ani-mals.	Sheep Scab. Out-breaks	Swine Fever. Out-breaks.	Swine Fever. Slaughtered.
GT. BRITAIN. Week ended May 24		13		13				6	6	54	84	2	54	1183
Corresponding week in	1912	14		14				3	4	51	89	1	66	1003
	1911	19		21				6	7			1	83	756
	1910		42		49			5	47			3	38	180
Total for 21 weeks, 1913		275		296				73	219	1442	2956	120	931	13802
Corresponding period in	1912	449		503				70	149	1928	4296	160	1407	17863
	1911	411		503		1	18	98	241			297	1016	10797
	1910		662		813			151	407			310	521	4676

† Counties affected, animals attacked: Essex 1, London 5.

Board of Agriculture and Fisheries, May 27, 1913.

IRELAND. Week ended May 24	...	...	...	...	...	...	Outbreaks ...	6	3	14
Corresponding Week in 1912 ...	...	...	...	...	...	...	...	...	7	118
Corresponding Week in 1911 ...	...	...	...	...	...	...	...	5	...	...
Corresponding Week in 1910 ...	...	...	...	...	...	...	...	6	4	75
Tota for 21 weeks, 1913 ...	...	...	...	...	...	...	83	284	65	389
Corresponding period in 1912 ...	2	2	...	...	...	...	37	249	111	1120
Corresponding period in 1911 ...	5	5	...	...	1	2	38	236	49	816
Corresponding period in 1910 ...	4	6	...	..	1	2	33	326	40	906

† These figures include animals slaughtered and found affected on post-mortem examination.

Department of Agriculture and Technical Instruction for Ireland, (Veterinary Branch), Dublin, May 26, 1913

NOTE.—The figures for the Current Year are approximate only. * As Diseased or Exposed to Infection

NORFOLK VETERINARY INSPECTORS ASSOCIATION.

The inspectors of the Association were fortunate in obtaining the services of Mr. H. P. Lewis, of Sheffield, to give demonstrations on the detection of tubercle bacillus in milk. These demonstrations were held daily at the Bell Hotel, Norwich. from the 21st to 24th inst., and were well attended, there being present eighteen Norfolk inspectors and two Suffolk men (by invitation), and at the last meeting on the 24th inst. the members expressed their appreciation of the pains and trouble Mr. Lewis had taken.

W. WATERS.

Organization of Department of Agriculture, South Africa.

Secretary for Agriculture: F. B. Smith. Under-Secretaries for Agriculture: P. J. du Toit and A. Holm. Deputy-Accounting Officer: J. Collie. Chief Clerk: G. N. Williams. Officer in Charge of Inquiry Office, Capetown: G. W. Klerck.

Administrative Office, Pretoria; Telegraph Address, Landbouw, Pretoria.

VETERINARY DIVISION.

This Division endeavours to prevent the introduction of contagious diseases of live stock into the Union and to eradicate such as are already present, and to protect live stock against enzootic diseases by inoculation and other means. So far as it is able to do so without interfering with its other duties, the Division advises and assists farmers upon diseases of stock generally and endeavours to enlighten them upon veterinary hygiene and the care of live stock. For veterinary purposes the Union is divided into five areas, each in charge of Senior Veterinary Officers, who are responsible for the control of disease within these areas.

Principal Veterinary Officer: C. E. Gray. Assistant Principal Veterinary Officer: J. D. Borthwick.

Cape Province.—Senior Veterinary Officer: R. W. Dixon, Government Offices, Parliament Street, Capetown. Government Veterinary Officers: C. S. Elphick, Vryburg; E. Fern, Capetown; A. Matthews, Capetown; G. W. Freer, Uitenhage; R. I. Jones, East London; J. H. L. Lyons, East London; J. Nichol, Kingwilliamstown; W. G. Pakeman, Queenstown; and W. A. Simson, Cradock.

Transvaal.—Senior Veterinary Officer: J. M. Christy, Department of Agriculture, Pretoria. Government Veterinary Officers: R. S. Garraway, Pretoria; W. G. Evans, Volksrust; P. Conacher, Johannesburg; J. G. Bush, Krugersdorp; T. H. Dale, Potchefstroom; H. M. Webb, Zeerust; J. M. Tate, Rustenburg; J. Chalmers, Nylstroom; J. I. Edgar, Pietersburg; G. Lee, Lydenburg; G. C. Webster, Barberton; D. B. J. McCall, Ermelo; and G. May, Standerton.

Natal.—Senior Veterinary Surgeon: W. M. Power, Colonial Buildings, Pietermaritzburg. Government Veterinary Surgeons; S. H. Ewing, Eshowe; A. F. Harber, Point, Durban; S. I. Johnston, Maritzburg; F. J. Hill, Bulwer; A. Goule, Maritzburg; J. L. Webb, Mooi River; C. Tyler, Ladysmith; and F. Hutchinson, Dundee.

Orange Free State.—Senior Veterinary Surgeon: A. Grist, Government Buildings, Bloemfontein. Government Veterinary Surgeons: J. F. Joyce, Ficksburg; J. A. A. Hamilton, Kroonstad; F. M. Skues, Bethlehem; C. H. Wadlow, Smithfield; and C. T. Clemow, Frankfort.

Transkeian Territories.—Senior Veterinary Officer: J. Spreull, Umtata. Government Veterinary Surgeons: A. C. Kirkpatrick, A. M. Howie, T. M. Doyle, W. A. Dykins, A. Goodall, G. T. Henerson, and J. A. Worsley

DIVISION OF VETERINARY RESEARCH.

The duty of this Division is the investigation of diseases of live stock with a view to discovering methods of eradicating them or of protecting animals against them. It examines and reports upon pathological specimens forwarded by the Veterinary Division and farmers, and prepares vaccines and sera of various kinds, and also mallein, tuberculin, and other diagnostic and preventive agents.

Opportunities are offered to post-graduate students for the carrying out of special investigations and a great deal of educational work is performed by the Division.

The Division is in close touch with and is complementary to the Veterinary Division. Director of Veterinary Research: Dr. A. Theiler. Assistant Director of Veterinary Research: W. Robertson. Superintendent: E. Parkes. Professional Assistants: D. T. Mitchell, W. H. Andrews, D. Kehoe, F. Veglia, W. Jowett, G. N. Hall, G. A. H. Bedford, A. W. Shilston (Pietermaritzburg), and J. Walker (Grahamstown).

"Wind-sucker" and "Crib-biter."

JUDGE'S INGENIOUS THEORY.

This action was concluded at the Hull County Court on Thursday, May 22nd, in which Wilhelm Esselborn, a German horse dealer, sued Mr. Thomas Throup, of Cottingham, to recover £21 7s. damages for alleged breach of warranty in respect of the sale of a chestnut mare.

The animal which plaintiff said was warranted to be "good and sound," was now described as a wind-sucker and a crib-biter, and the principal question which His Honour, Judge Lock had to decide was whether a "wind-sucker" and "crib biter" was a sound horse.

Mr. Harry Wray, for the defendant, argued that wind-sucking and crib-biting were nothing more than vices, and in no way affected the question of an animal's soundness.

Mr. A. M. Jackson, for the plaintiff, agreed that the vice of temper would not be a breach of warranty of soundness, but if the vice was something which affected the health of a horse, he argued that it was a breach of warranty of soundness.

His Honour, in giving judment, said he would have preferred to have had the assistance of an East Riding jury, but in the circumstances he would pay more attention to veterinaries when they proved facts than when they exploited theories. Proceeding, he reviewed the evidence, and said he must hold there was a warranty given with the mare, viz., that the animal was in good and sound condition. The vices of crib-biting and wind-sucking had come more or less under his own personal observation, and he did not think there was really any dispute amongst those who knew horses as to what was the cause of them. One witness said "idleness," but personally he did not think that idleness, happy idleness, was alone responsible. What produced these habits was boredom It seemed to him that these habits, especially in young horses, arose in exactly the same way that they did in young children. If a boy or a girl in the habit of running about was sent to school for long hours, they would, if they afterwards examined their pens and pencils, find they were nearly all chewed at the ends. That was nothing more or less than crib-biting, the occupation of a bored and irritated nature shut up. That was exactly what a horse did when it started crib-biting. Children could be cured of that, and he believed horses could be cured in exactly the same way as children.

Perfectly analogous to wind-sucking on the part of a horse was the thumb sucking on the part of a child. It

produced colic and wind, and that was the reason why a good mother or nurse would do everything they could to prevent a child sucking its thumb. A horse sucked its tongue. Having regard to the fact that this mare had been left out in the fields, except in winter, and was now locked up in a stable in the month of July, it was not surprising that at the end of five weeks it had developed these vices of wind-sucking and crib-biting. If everybody had realised that, and that it was quite incipient, it was quite possible that action would never have arisen, at any rate, if they were under the impression that the habits were curable. He had no doubt that when it was re-sold in October it was practically cured. As to whether the warranty covered wind-sucking His Honour said he could not accept the contention that the words "good and sound condition" meat nothing more than thoroughly sound. He thought that "good" meant something more than "sound," and he interpreted its meaning to be "free from vice."

Judgment was, therefore, entered for the plaintiff for the amount claimed with costs.—*The Yorkshire Herald.*

Kumis Health Resorts in Ufa.

Ufa is celebrated for its kumis health resorts to which invalids from all parts of Russia flock, so that a few particulars of the means and method of treatment may not be without interest, and may be gathered from the official handbooks in Russian and rendered available for foreigners by means of Esperanto.

Kumis is an ancient drink of Mongol tribes, especially the nomads of the steppes of Asia and South-east Europe, but it has only come into prominence during the nineteenth century. Dr. Grave wrote about it in 1781 calling attention to it as a remedy, but Dr. Postnikov was the first to give it serious attention, and founded a health resort in 1858. Since that time kumis treatment has extended rapidly.

Kumis is prepared from the milk of mares pastured on the steppes, the best being obtained from those feeding on broom, but unfortunately this fodder is rapidly disappearing. A mare gives 5 to 6 bottles of milk a day, which is poured into a wooden receptacle ; old (strong) kumis is added, and starts fermentation in the milk, which is kept in a warm place and stirred from time to time. The commencement of fermentation depends on the temperature and occurs after a few hours, then glass bottles are filled and sealed and placed in a refrigerator in order to stop the fermentation. This kumis is called weak, and after warming for a short time, medium, and finally strong. The medium is generally used in treatment, as the strong has a laxative effect and a somewhat disagreeable flavour. Extreme cleanliness is obligatory in the preparation of kumis, for acetic and butyric acid, by-products of fermentation, are readily formed, which spoil it and make it objectionable. Good medium kumis is a dense fluid, frothing well, somewhat sweetish sour in taste, leaving in the glass a thick opaque sediment. It is slightly alcoholic—about 3 per cent., which induces sleep in the patient, who usually drinks 5 to 6 bottles a day. Kumis alone is not an effective remedy, for it does not contain enough nutriment or specific qualities against, say, the bacillus of Koch, but it is an excellent diet auxilliary, inducing appetite, and—what is especially useful—being used in the open air under a clear bright sky, the steppes being an ideal spot for the treatment. So that a kumis course in one's own home is not likely to be of use. Kumis has markedly good effects in the early stages of hæmorrhage but is contraindicated in the later.

The usual routine is breakfast between 6 and 8, tea or coffee, followed by kumis, a walk between 10 and 11. Lunch at 1 with kumis, and again at 3, dinner at 5 to 6, followed by tea and bed at 10.

V.S. N. Foss, Ufa. Trans. F.E.P.

The So-called Toxicity of Ascarides.

Eguerrini (*Archiv. di Biolog. Milan*, An. 64, f. iv) criticises some of the evidence adduced in favour of the toxic power of ascarides, and gives the result of certain experiments on the frog's heart when the animal was injected with various extracts of ascarides. The coelomatic fluid of the parasite was first used, then an extract of the cuticular and muscular apparatus, next an extract of the intestines and genital organs, and, finally, an extract of the parasites *en masse*. In every case the result was negative, as far as any changes in the cardiogram could be detected. As the method (Engelman's) used by the author is very delicate, it does not appear that ascarides possess any toxic property. When authors affirm that certain phenomena are symptomatic of worms, or that certain symptoms are likely to occur in people who harbour these parasites, or, again, that certain symptoms have followed the experimental injection of extracts prepared from ascarides, the author replies by a direct negative, and says that if any of these things have occurred it is not a case of cause and effect, but either a coincidence or an error of observation. The particular ascaris experimented with by the author was the *A. megalocephala.*—*Brit. Med. Journal.*

Mole-catching Terriers.

Mr. J. C. Bristow-Noble, writing to *Farm and Home*, says : "Two years ago there came under my notice a wire-coated fox-terrier, who, interesting to say, will systematically hunt the mole. The dog in question is practically a self-taught moler, although, as soon as it was noticed that she was acquiring the habit, every encouragement was given her. Before I heard of this terrier, I had never come across a dog who would hunt the mole as it should be hunted, although, of course, I had heard of instances of many dogs occasionally catching a mole, and I knew of several foolish enough to try to dig moles out of their runs. Since then, however, two of the dog's puppies, both females, and both now nearly four years of age, have become valuable molers. One inherited the accomplishment, and had caught fully a hundred moles by the time she was three years of age ; the other, who has never been separated from her mother, was taught by her parent. The dogs present a very pretty spectacle when at work where moles are plentiful and busy, tunnelling and feeding.

When one of them winds a mole (and all three being possessed of exceptionally good noses, it has been calculated they are able to catch the scent when undoubtedly the quarry is several inches in the ground), she first stops for a few moments to assure herself of the mole's whereabouts, then she goes slowly forward step by step and inch by inch, lifting each foot with infinite care to the exact spot where the creature is working, and there she waits, sometimes for many minutes, until the hunted is perhaps less than an inch in the ground. Now she throws her weight on her hind legs, and stoops and springs, thrusting her nose into the hill or run, as the case may be, and nine times out of ten the mole is caught and promptly killed. Up to the present it has been found unprofitable to work the dogs together, for they cling together, and all try to catch one and the same mole, with the result that the animal invariably escapes. But efforts, which are slowly bearing fruit, are being made to break them of this annoying habit.

It is in the spring of the year, when the grass is still short and corn in the fields is just beginning to show, that the dogs catch the most moles, and on a day when the air is fairly moist and the breeze strong. On such a day the oldest of the three has caught as many as a dozen moles in the brief space of an hour or so. Care has to be exercised to see that they hunt against the wind.

The dogs are an exceptionally hard strain, and, like most animals that show unusual intelligence, excellently and carefully bred. They are, moreover, good ratters, good at bolting a fox and otter, and have rendered valuable assistance at many a badger dig and hunt. The only fault that can be found with them is that they are on the large size from the sportsman's point of view, but not from the showman's—a fault common to so many terriers. Moling is their favourite occupation, and one of them will spend hours alone in a large meadow diligently hunting."

Appointment of Veterinary Inspector.

At the meeting of the Rathdown (No. 1) Rural District Council, May 21, the Clerk (Mr. P. Cunniam) said the meeting had been specially summoned for the purpose of appointing an inspector under the Dairies, Cowsheds, and Milk Shops Order, at a salary of £50, in room of Mr. Mason, V.S., who had resigned.

Mr. Collins said a new order was coming into operation on the 2nd June, and, he presumed, it would be the duty of the officer to do the duties in connection with it. He proposed a resolution in accordance with his statement. Mr. Roe seconded, and the resolution was carried unanimously.

There were three applicants for the post, viz., J. J. Doyle, Blackrock; John J. Kelly, Dublin; and Albert O'Neill, Bray.

Mr. Doyle was called before the meeting and, when the conditions as expressed in Mr. Collins' resolution were made known to him, agreed to abide by them.

Mr. Kelly said in fairness to himself and the public he could not agree to accept them.

Mr. Collins pointed out that the resolution meant that they would not give any increase of salary for any duties under the new Act unless there were reasonable grounds for it.

Mr. Kelly said if they had had an opportunity of reading the Act carefully they would have seen that the public would have to bear a good deal of the expense its working would entail, and it would be unfair to ask any candidate to absolutely bind himself beforehand.

Mr. Collins asked Mr. Kelly would he go forward on the conditions of the resolution?

Mr. Kelly said he could not.

Mr. O'Neill agreed to accept the conditions.

The question arose as to whether they should include Mr. Kelly's application under the circumstances.

Mr. O'Brien said if they would not make the appointment in accordance with the advertisement they should postpone the matter and re-advertise.

Mr. Collins protested. That point should have been raised before his resolution was passed unanimously. They ought to be men—not women.

The Chairman thought they ought to entertain all the applications.

Mr. Collins: We will entertain two. One of them will not comply with the conditions put forward.

Only two applicants were proposed and seconded, viz., Mr. Doyle and Mr. O'Neill.

The voting was as follows:—For Mr. Doyle, 9; for Mr. O'Neill, 6. Mr. Doyle was accordingly appointed.

OBITUARY

JAS. BARROWMAN BLACK, M.R.C.V.S., Penicuick, Edin. 1870. Graduated, Edin: April, 1880.

Mr. Black died on May 24th. Aged 65 years.

THE FINANCES OF THE R.C.V.S. AND A SUGGESTION.

Sir,

As was to be expected, the year's balance sheet is as bad as it can possibly be—£465 deficit. Some time ago, an experiment was tried, which I am told, proved to be a ghastly failure as well as a remarkable surprise. It was proposed that all those members of the profession who were in favour of the new Bill should pay the 21/- per annum for registration, without waiting for the Bill to become law. It was remarkable, because it was, and is still supposed that the majority of the profession were in favour of the Bill. If this is the case, why don't these members pay the annual fee and so help the College? Surely it is to their own interest that the R.C.V.S. should be placed on a firm financial footing. Why then should they decline to pay a paltry guinea per year, till they are compelled to do so by law? *O tempora! O mores!*—Yours, etc.,

"VIS UNITA FORTIOR."

[Our recollection is that it was *the opponents* of the Bill who were given the chance of voluntary contribution which they had so applauded, and that not three of them sent a coin.—ED.]

Veterinary Societies—Addresses.

BORDER COUNTIES V.M.S.
Pres: Mr. J. W. Hewson, M.R.C.V.S., Wigton
Hon. Sec. (pro tem.): Mr. F. W. Garnett, M.R.C.V.S., Dalegarth, Windermere
Meetings, Second Friday of Feb., June, and October

NORTH MIDLAND VETERINARY ASSOCIATION
Pres: Mr. F. L. Somerset, M.R.C.V.S., Chesterfield
Hon. Sec: Mr. J. S. Lloyd, F.R.C.V.S., Sheffield

GLASGOW V.M.S.
Pres. Principal McCall.
Hon. Sec. Mr. J. Gibson, 16 Overdale Gdns, Langside, Glas

ROYAL VETERINARY COLLEGE M.A.
Pres: Dr. Lander, D.Sc.
Hon. Sec: Mr. S. Gorton, M.R.C.V.S. *Assist*. Mr. T. J. Davis

ASSOCIATION OF VETERINARY OFFICERS OF HEALTH
Pres: Mr. J. G. Reynard, M.R.C.V.S., Perth
Hon, Sec. & Treas. Mr. A. M. Trotter, M.R.C.V.S., Moore Street, Abattoir, Glasgow,

NATIONAL ASSOCIATION OF VETERINARY INSPECTORS
Pres: Mr. J. Abson, F.R.C.V.S., Sheffield
Hon. Sec: Mr. Trevor Spencer, M.R.C.V.S., Kettering

NATIONAL VETERINARY BENEVOLENT & MUTUAL DEFENCE SOCIETY.
Pres: Mr. W. A. Taylor, F.R.C.V.S., Brick-st, Manchester
Hon. Sec: Mr. G. H. Locke, M.R.C.V.S. Grosvenor Street, Oxford-st., Manchester
Treas: Mr. J. B. Wolstenholme, F.R.C.V.S., Quay-street, Manchester

VICTORIA VETERINARY BENEVOLENT FUND.
Pres. W. Freeman Barrett, Esq. Fountain Ct, Temple, E.C.
Hon. Sec. & Treas: Mr. W. Shipley, F.R.C.V.S. South Town, Great Yarmouth

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COLONIAL SOCIETIES (*continued next page*)

VETERINARY ASSOCIATION OF NEW SOUTH WALES.
Pres: Mr. S. T. D. Symons. M.R.C.V.S., Chief Inspr. of Stock
V. Pres: Major A. P. Gribben, F.V.O., M.R.C.V.S.
Hon. Sec. & Treas: Mr. Max. Henry, M.R.C.V.S., B.V.SC. (SYD). 56 Bridge Street, Sydney

NATIONAL VETERINARY ASSOCIATION

Pres. Mr. William Hunting, F.R.C.V.S.
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Meetings, 1st Thursday in April, June, Sept., & Dec.

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NORTH OF ENGLAND V.M.A.
Pres:
Hon. Sec: T. T. Jack, M.R.C.V.S., 3 Elmwood Ter, Sunderland
Meetings, Third Friday, Feb., May, Aug. and Nov.

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Pres: Mr. F. Booth, M.R.C.V.S., Colwyn, Denbighshire
Hon. Sec. Mr. L. W. Wynn Lloyd, M.R.C.V.S., Carnarvon
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Grange Road, Darlington
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Hon. Sec: Mr. H. A. MacCormack, M.R.C.V.S.,
122 St. George's Avenue, Tufnell Park, N.
Meetings, First Thursday in each month, except August and September, 10 Red Lion Square, Holborn, at 7 p.m.

EASTERN COUNTIES V.M.A.
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37 High Street, Lowestoft
Meetings, Second Tuesday, Feb., July and Sept.

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Boston Road, Sleaford
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Hon. Sec. & Treas: Mr. G. P. Male, M.R.C.V.S., Reading
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34 High Street, Dover
Meeting, Second Wednesday in May: Maidstone

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Meetings, Third Thursday, March, July and November

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Meetings, Last Saturday in January and August

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SCOTTISH METROPOLITAN V.M.S.
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Public Health Dept., City Chambers, Edinburgh

WEST OF SCOTLAND V.M.A.
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Hon. Sec: Mr. J. F. Macintyre, M.R.C.V.S.,
19 Bank Street, Hillhead, Glasgow
Hon. Treas: Mr. Geo. W. Weir, M.R.C.V.S.,
88 Crookston Street, Glasgow
Meetings, Second Wednesday, May, Oct. and January.

COLONIAL SOCIETIES: *(see preceding page)*

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Hon. Pres: Dr. Hamilton, M.R.C.V.S., Victoria.
Sec., Treas., Registrar. Dr. T. Jagger, V.S., Vancouver.

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